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DESCRIPTION  
MATRIX TYPE DISPLAY DEVICE AND MANUFACTURING  
METHOD THEREOF

Technical Field

The present invention relates to a matrix type display device and a manufacturing method thereof, and particularly to a matrix type display device having a structure in which an optical material such as a fluorescent material (luminescent material), a light modulation material or the like is selectively arranged at predetermined positions on a display substrate, the optical material being liquid at least during coating, and a manufacturing method thereof wherein the optical material can accurately be arranged at the predetermined positions.

Background Art

Matrix type display devices such as an LCD (Liquid Crystal Display), an EL (Electroluminescence) display device, and the like are frequently used as various display devices that are light weight, thin, and have high image quality and high definition. A matrix type display device comprises matrix-formed bus lines, an optical material (luminescent material or light modulation material), and if required, other components.

In a monochromatic matrix type display device, wiring and electrodes must be arranged in a matrix on the display substrate, but the optical material can be uniformly coated over the entire surface of the display substrate.

In contrast, for example, when a so-called matrix type color display device is realized by using an EL display device of the type that emits light by itself, it is necessary to arrange three pixel electrodes corresponding to the primary colors RGB of light for each pixel, and coat the optical material corresponding to any one of the primary colors RGB for each pixel electrode. Namely, the optical material must be selectively arranged at the predetermined positions.

There is thus demand for developing a method of patterning the optical material. Suitable examples of effective patterning methods include etching and coating.

The etching process is carried out as follows.

First, a layer of an optical material is formed over the entire surface of the display substrate. Then a resist layer is formed on the optical material layer, exposed to light through a mask and then patterned. Then the optical material layer is patterned by etching in correspondence with the resist pattern.

However, in this case, a large number of steps are required, and each of the materials and apparatus used is expensive, thereby increasing the cost. Also a large number of steps